

## The system approach to modernisation and innovative regional development: strategic objectives

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Veröffentlichungsversion / Published Version  
Zeitschriftenartikel / journal article

### Empfohlene Zitierung / Suggested Citation:

Shekhovtseva L. S., & Shekhovtseva, L. S. (2011). The system approach to modernisation and innovative regional development: strategic objectives. *Baltic Region*, 3, 85-93. <https://doi.org/10.5922/2079-8555-2011-3-11>

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*L. S. Shekhovtseva*

**THE SYSTEM APPROACH  
TO MODERNISATION  
AND INNOVATIVE  
REGIONAL DEVELOPMENT:  
STRATEGIC OBJECTIVES**



*Russia must follow the path of modernisation and innovative development. The analysis conducted shows the absence of laws, strategies and uniform terminology regarding modernisation and innovations. The author examines the factors affecting the content of these terms, describes the system approach to modernisation and regional innovative development, develops regional methodology and identifies the strategic targets for modernisation and innovative development.*

**Key words:** modernisation, innovations, development, region (territory), methodology, system approach, strategic targets.

Among ways of development, Michael Porter identified the innovation scenario as the most efficient out of the four possible ones (natural resources, investments, innovations, wealth) [9]. The rightfulness of this choice is corroborated by the experience of developed countries.

In Russia, the situation is slightly different, which relates to lagging behind in the field of advanced technologies, institutional support, as well as the obsolescence and significant depreciation of production equipment and infrastructure. Thus, the abandonment of raw material economy requires modernisation and simultaneous transition to innovative economy.

M. Porter's concept requires a combination of two types of development — the investment and innovation ones, which points to the unprecedented nature of the problem. The vital necessity of solving this problem attached to it the status of a governmental concern.

The solution to this problem is hindered by the absence of a legal framework in the field of modernisation and innovative development in the country. There is neither a strategy, nor unified terminology in this field.

Let us consider the definition given by academician A.G. Aganbegyan in June 2010 at the meeting of the International Directors' Club, which is chaired by him, in Krasnoyarsk: "The modernisation we are discussing today is a structural rebuilding of national economy, first of all, aimed at creation of an innovative economy, launch of the "innovation mechanism". Innovative economy is an economy involving a scientific idea or a new technology, its implementation as a product, i.e. production, generation of demand for the new product and its promotion on the market — commercialisation of research results" [17, p. 76].

The deputy chair of the State Duma Energy Committee, I. Grachev, quoted the definition of innovative activity in an interview with the *Rossiyskaya Gazeta* [30] given in the bill that has been discussed for seven years: innovative activity is an activity aimed at the proper transformation of formalised knowledge (patents, know-hows) and their implementation as products. I. Grachev criticised this phrasing and defined the phenomenon more concisely: it is an activity aimed at the transformation of knowledge into money.

A definition of the term *innovation* similar to this understanding is given by G. A. Untura, who expanded it through “return of investment”: “It is polysemic, i. e. refers both to the process and result of implementation of a novelty ensuring social and/or commercial return of investment” [11, c. 128].

A more detailed definition of innovations is offered in N. A. Kravchenko’s work: “At the level of intuition, innovations are associated, first of all, with advanced technologies and the application of research results. But it is only one of the sources of innovations. A great number of innovations are an accidental and unexpected result of the development and abstraction of business practices as a response to consumer demand. Research results turn into innovations when products created on their basis receive recognition on the market — consumers buy them, manufacturing companies yield profit. Thus, a number of technical and technological innovations were not accepted on the market without being combined with other forms of innovations — organisational or marketing ones” [4, p. 61—62]. This definition takes into account certain parameters of technological, organisational, and marketing innovations reflected in statistics.

The above definitions interpret innovations predominantly in the context of new products and technologies. Although, according to Joseph Schumpeter, they also include the application of new methods of commercial usage, development of new markets and raw material sources, changes in the industry structure (creation and disintegration of monopolies), expansion of businesses [18].

Such limitations in the definition of the term *innovation* apparently stem from the relevance of the objectives of the state’s current economic policy. For instance, Skolkovo will attract the best and unique research [2].

However, there are other possible approaches to innovations that relate to the above mentioned perspective of Joseph Schumpeter and the degree of their novelty.

The innovation pause hypothesis formulated by academician V. Polterovich and his modernisation strategy justify closer cooperation with developed states through the use of technologies created in the leading countries [8]. It means the application of innovations of the national rather than the world level.

So, Natalia Kurakova, the director of the Centre of Venture Business of Moscow International Higher Business School emphasises the innovatively active enterprises are not always based on advanced technologies. She draws the American companies 3M and P&G, which reached international top 10 in 2009, as an example. These companies produce a large amount of “unadvanced” but popular technologies and commodities (adhesive tapes, abrasives, shampoos, etc.). Their budget is comparable to that of the Russian Federation [6].

Of importance is the degree of innovation novelty. The country can introduce innovations of the world (new for the world, radical), national (new within the country), regional (new for the region), and corporate (new for the company) levels.

I believe the content of the term *innovation* (as well as other basic economic concepts, for example, *competition*) are of multilevel, multifaceted, dependent on investment and time (simultaneously process- and result-related) nature. Its interpretation also depends on the targets of regional eco-

nomic policy and criteria for identifying enterprises as innovative. A. B. Pushkarenko lists these criteria in one of his works [10]. For example, the Tomsk region introduced a ranking of not just innovative but actively innovative enterprises according to the following criteria:

- annual increase in self-produced shipped goods of not less than 25 %;
- share of expenditure on innovation and R&D of not less than 10 %;
- one or more reserved rights to the results of intellectual activity.

In accordance to the regional legislation of the Tomsk region, innovative enterprises are granted preferences and benefits, for instance, profit and property tax rebates and investment tax credits.

Saint Petersburg applies the following quantitative criteria to innovative enterprises:

- R&S expenditure to the total expenditure ratio of 3—15 %,
- innovative products to the total production ratio of 7—20 %,
- profit/investment ratio of innovative activity of more than 1.

In line with the economic policy aimed at the development of innovative activity, Saint Petersburg offers subsidies for innovative initiatives.

In Moscow, where rental rates are very high, innovatively active organisations are provided with premises at science parks and business incubators on easy terms. The quantitative criteria for innovatively active enterprises are as follow:

- the specific weight of innovative products in the total volume of shipped good of no less than 40 % as of the fourth year of enterprise's activity,
- two or more applications submitted for the registration of rights to intellectual property over the planning period,
- the organisation should be classed in accordance to the All-Russian Classifier of Economic Activities as a processing enterprise or software developer.

Thus, innovations require a scientific, managerial, marketing or technological idea, its implementation as a product (service, process, market institution, infrastructure or other elements of market system), and the selling of this product (service, element) on the market leading to an increase in profitability and competitiveness of the organisation at the local, regional, national, and world scale. Innovation is the commercialisation of competitive ideas on the regional, national, and world markets carried out in the framework of the current economic policy.

Form the point of view of the current innovative policy, of special importance is the recommendation of academician V. Polterovich regarding the development of new institution of interactive growth management based on the interaction between the state, business associations, and society [8]. In my opinion, these recommendations are similar to the concept of controlled regional development presented in this article and based on the mutual supplementation of the administrative hierarchy and the coalition approach, which implies the harmonisation of the interests of key regional target-setters: population, business community and authorities in the system of strategic management of spatial development [12; 13].

The modernisation and innovative development of the region must involve all the elements (subsystems) and processes of the regional system (fig. 1).

Fig. 1. System structure of a region

The elements of regional system include population, business community, authorities, infrastructure, institutions, environment, and security, which correlate with the following subsystems: social, economic, infrastructure, institutional, environmental and security ones [12; 13].

The justification of the system approach to a region was offered by the author in the doctoral thesis, monographs, and other publication [12—15]. In order to dispel the doubts of some researchers over the incompleteness of the system nature of a region [7], the above mentioned works prove that region is a system, since it has three system-building properties: 1) it is a subsystem of a system of a higher rank (national system); 2) it represents a unity composed of the above mentioned elements; 3) all elements (subsystems) of a region are interconnected, interdependent, supplement each other, interact with the environment, and form a unity.

In the course of regional system modernisation, the key role is played by the interaction of three active elements of this system: population, business community, and authorities. For example, population generates demand for innovative products, services offered by business, administrative, educational, and healthcare institutions and other elements of infrastructure, and provides the systems with competitive staff. Business community identifies and meets the demand for innovative jobs, goods, and services, infrastructure, institutions and other competitive elements of the regional system. Authorities create conditions for innovative business and the modernisation of institutions, infrastructure, healthcare, education and coordinate the setting of strategic targets and their achievement in the region. Innovative processes include a “triple spiral” of interaction between the scientific and educational community, authorities, and business community.

The new model of regional development gives priority to the formation of balanced system of strategic targets for modernisation and innovative development.

According to the concept and methodology developed by the author of the article [12; 13], strategic target setting must rest on the following key principles:

- *principle of combining the administrative and coalition approaches* relates to supplementing public administration with the self-organisation of regional community and suggests harmonising the targets of the key regional target-setters.

- *principle of multiple levels and fractality* means that not only the targets of the regional systems, but also those of the macrosystem that embraces the region, and those of constituent subsystems (i.e. macro-, meso-, and micro-level targets) are taken into account; fractality ensures that the targets of different levels are placed inside one another not dissimilar to a nested doll elements.

- *principle of combined universality and uniqueness* consists in the division of the target into the basic (standard) and specific components. The content of standard targets is determined through analysis of the factors and results of development in the context of economic and regional theories, agent-function analysis of the region and the abstraction of experience in

setting regional strategic targets. It is suggested that target benchmarks are set three ways: on the basis of the author's strategic typology of regions on the basis of the criteria affecting the potential of regional development; on the basis of regional models of organisational development; on the basis of systematised methods of calculating the qualitative and quantitative values of the targets.

- *principle of dividing targets into the semantic component* (target benchmarks) *and measuring element* (target values) makes it possible to assess the vertical and horizontal connections between target benchmarks and model numerical target values.

- *principle of application of established and evaluative measuring mechanisms* is based on different approaches to the measuring and modelling of target values calculated according to the methodologies of international (national) organisation (for example, GDP) or expert methodologies (for example, regional competitiveness).

- *principle of multidimensional and dynamic nature of target measuring* manifests in the abundance of variants and criteria and the choice of administrative decisions within strategic target setting [16].

These principles are universal and applicable to any model of regional development, including the innovative one. The key standard strategic target of innovative regional development is the pursuit of high living standards comparable to those of the developed countries.

In case the region chooses the path of innovative development, the importance of the objectives "to facilitate an increase in production efficiency" and "to increase regional competitiveness" increases. Each of these targets splits into targets of a lower level. So the achievement of the first target implies that the following second-level targets are reached: regular upgrade of technologies, product types, and institutions; development of research and innovative activity; facilitation of structural changes in national economy; technical modernisation of production equipment, etc.

The achievement of the second target requires its fragmentation into the following second-level subtargets: formation of competitive production factors, strategic assets, and human capital; stimulation of demand for innovative products, facilitation of the development of related industries, clusters, networks; development of competitive organisation strategies, etc. These targets constitute a standard tree of macroeconomic targets of regional development (fig. 2) [13].

An enlarged model of strategic target for regional development and their connections based on the system approach can be presented in the form of a standard strategic map of regional target (cognitive model chart) (fig. 3) [13, p. 85].

The modelling of strategic targets of regional innovative development is connected with measurement and search for the ways of their achievement. As to measurement, strategic targets are divided into established and evaluative ones. The former are identified according to methodologies established by international and national organisations and indices (GRP), the latter according to expert methodologies and indices (regional competitiveness, quality of life).

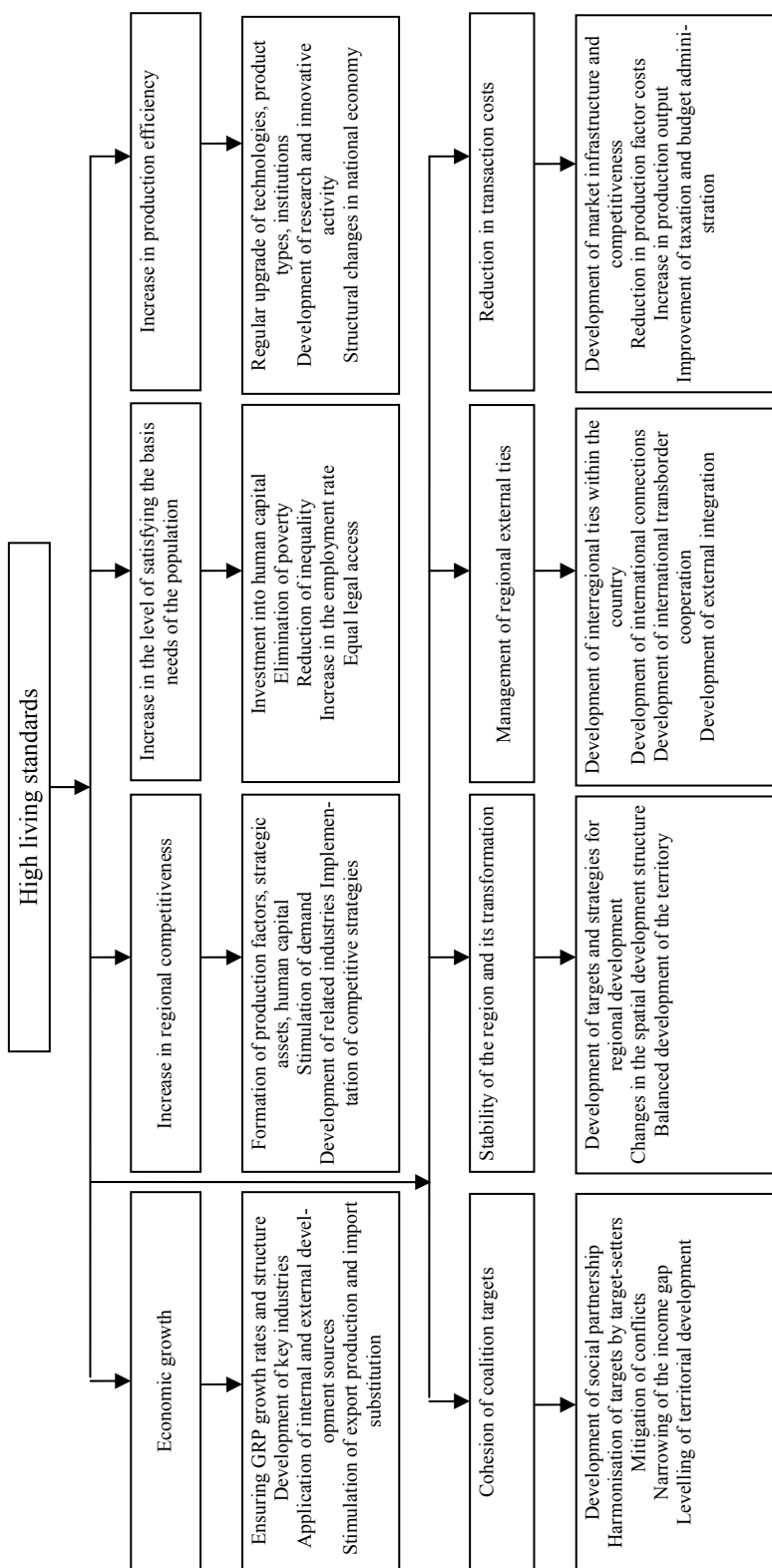


Fig. 2. Tree of strategic target of regional development



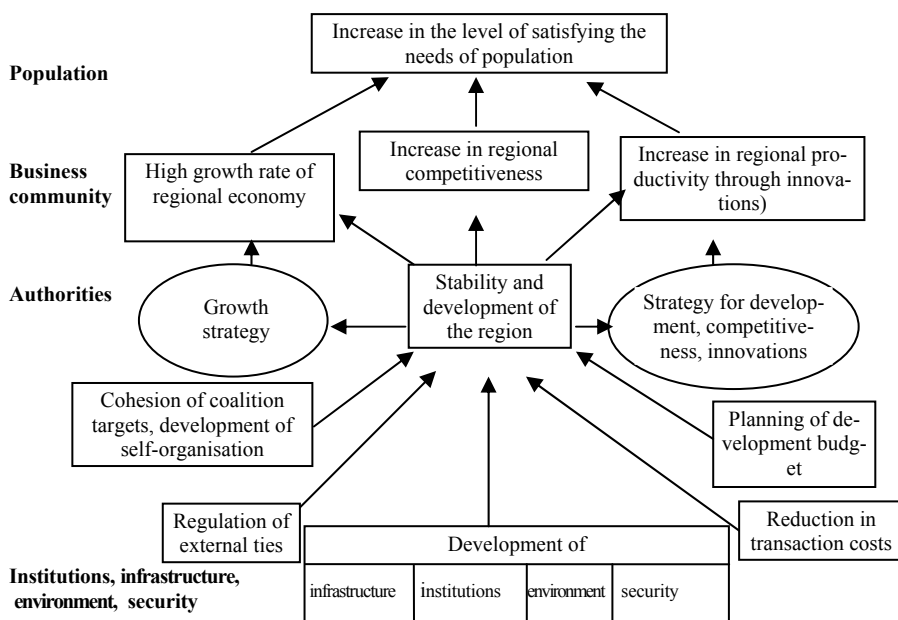


Fig. 3. Map of strategic targets of regional development

The analysis of approaches to measuring quality of life and regional competitiveness, as well as a methodology for measuring regional competitiveness are offered in [12; 13].

So, a successful development of regional innovative economy depends on the system modernisation of all elements of the regional system. The developed methodology of target-setting makes it possible to create a balanced system of strategic targets of regional innovative development as one of the most important modern factors of harmonised formation of a new economic model.

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